



THUNDER[®]



TH650.1D

Mono Block Class D Power Amplifier
Designed by MTX in the USA

www.mtx.com

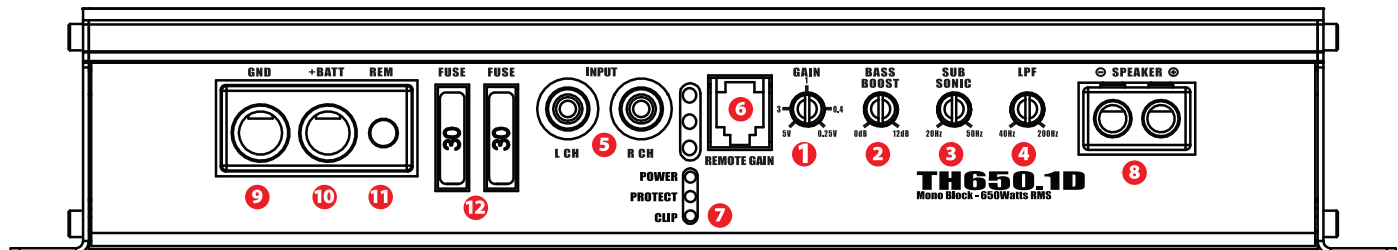
Introduction

Thank you for purchasing an MTX Audio Hi-Performance amplifier. Proper installation matched with MTX speakers and subwoofers provide superior sound and performance for endless hours of enjoyment whether you are waking the neighbors or just out enjoying your tunes. Congratulations and enjoy the ultimate audio experience with MTX!

Specifications

- 1-Channel Mono Block Class-D Power Amplifier
- CEA2006 certified Power Output:
 - 650 watts RMS x 1-channel at 1 Ω and THD+N \leq 1%
 - 400 watts RMS x 1-channel at 2 Ω and THD+N \leq 1%
 - 250 watts RMS x 1-channel at 4 Ω and THD+N \leq 1%
- Crossover:
 - Low pass 24dB/oct variable from 40Hz to 200Hz
- Subsonic Filter, 20Hz-50Hz, 12dB/oct
- Signal-to-Noise Ratio (1 watt): > 75dB
- THD+Noise (Distortion) (1 watt): \leq 1%
- Frequency Response (\pm 1dB): 20Hz-200Hz
- Maximum Input Signal: 5V
- Maximum Sensitivity: 250mV
- Dimensions: 11- $\frac{3}{8}$ " x 7- $\frac{5}{8}$ " x 2- $\frac{1}{2}$ "
- High level inputs
- EBC (External Bass Control) remote included

Control Panel





Control Panel

- 1** Gain Control(GAIN) : The gain control matches the input sensitivity of the amplifier to the source unit being used. The operating range varies from 250mv to 5V.
Adjusting the gain
 1. Turn the gain control on the amplifier all the way down (counter clockwise).
 2. Turn up the volume control on the source unit to approximately ¾ of maximum.
 3. Adjust the gain control on the amplifier until clip light illuminates and then reduce until light turns off.
 4. Adjust the gain control down until audible distortion disappears.
 5. The amplifier is now calibrated to the output of the source unit.
- 2** Bass Boost Control (BASS BOOST):
Allows user to adjust the bass boost between 0dB - 12dB at 40Hz.
- 3** Subsonic Filter Control (SUB SONIC):
Used to select the desired subsonic filter frequency. The frequency is adjustable from 20Hz to 50Hz.
- 4** Low Pass X-Over Frequency Control (LPF):
Used to select the desired low-pass (LP) x-over frequency. The frequency is adjustable from 40Hz to 200Hz..
- 5** RCA Inputs (INPUT): These RCA inputs are used with source units that have either RCA/Line level or speaker level outputs. (Source units need a minimum level of 250mV output for proper operation of the amplifier).
MTX recommends only high quality twisted pair cables (such as StreetWires) to decrease the possibility of radiated noise entering the system.
- 6** EBC Port (External Bass Control): The EBC plugs directly into this port, and the EBC should be plugged in and set to Max if used while setting gain. While the EBC itself can be placed anywhere in the vehicle for on demand bass adjustments. EBC is included.
- 7** LED Indicators: Your TH amplifier is equipped with 3 LED indicators, Power, Protect, and Clip.
 - The Power LED will illuminate when the unit has power from a 12V source and 12V is applied to the remote terminal.
 - The Protect LED will illuminate when the amplifier enters protect mode due to an electrical short or excessive thermal incident (see Troubleshooting).
 - The Clip LED light is connected to the gain control of the amplifier. This LED will illuminate when the amplifier has reached its RMS power output based on the attached speaker load (impedance). If this LED is illuminated the amplifier is running outside of its recommended configuration and requires adjustment. For optimal performance, the gain should be reduced until this LED light turns off.
- 8** Speaker Terminals (SPEAKER): Connect speakers to these terminals. Observe speaker polarity throughout the system. Improper phase can result in loss of bass response and/or poor overall sound quality.
- 9** Ground Terminal (GND): A proper ground is required for your amplifier to operate at peak performance. A short ground cable the same diameter as the power cable should be used to attach the ground terminal directly to the chassis of the vehicle. Always remove paint, dirt or debris to expose bare metal where the ground will be attached.
- 10** Power Terminal (+BATT) : This is the main power input for the amplifier and must be connected directly to the positive terminal of the vehicles battery for proper operation. Use caution when installing (+12) power cable in the vehicle. Avoid running this cable parallel with RCA cables, antennas, or other sensitive equipment due to massive currents that can induce noise into the audio system. It is also very important to have a tight, secure connection for maximum performance. MTX recommends using 4AWG power wire with the MTX TH650.1D amplifier.
- 11** Remote Terminal (REM) : The amplifier is turned on by applying 12 volts to this terminal. Typically this voltage is supplied by a wire from the source unit marked "remote" or "power antenna".
- 12** Fuses (FUSE) : If the fuse blows, replace with the same value. Never use a higher rated fuse!

Installation & Mounting

MTX recommends your new THUNDER amplifier be installed by an Authorized MTX retailer. Any deviation from specified installation instructions can cause serious damage to the amplifier, speakers and/or vehicles electrical system. Damage caused from improper installation is NOT covered under warranty. Please verify all connections prior to system turn on !

1. Disconnect the vehicle's negative battery cable.
2. Determine the mounting place for your MTX amplifier. Keep in mind there should be sufficient air flow for proper cooling. Mark the mounting holes from the amplifier to be drilled. Before drilling make sure all vehicle wires, gas lines, brake lines and gas tank are clear and will not interfere with installation. Drill the desired holes and mount the MTX amplifier.
3. Install a positive (+) power cable from the vehicle's battery through the firewall using a grommet or firewall bushing to avoid cable damage from sharp edges of the firewall. Run the cable through the interior of the vehicle and connect it to the amplifier's +BATT terminal. Do Not connect to the battery at this time.
Note : Use only proper gauge wire for both positive and negative connections.
4. Install a circuit breaker or fuse within 7.87 in of the battery. This effectively lowers the risk of severe damage to you or your vehicle in case of a short circuit or accident. Make sure the circuitbreaker is switched off or the fuse is taken out of the fuse holder until all connections are made. Now connect your positive power cable to the positive battery terminal of the battery.
5. Grounding - Locate a proper ground point on the vehicle's chassis and remove all paint, dirt or debris to reveal a bare metal surface. Attach the ground wire to that contact point. Connect the opposite end of the ground wire to the (GND) terminal on the MTX amplifier.
6. Connect a Remote Turn-on wire from the source unit to the MTX amplifier's (REM) terminal. If the source unit does not have a dedicated Remote Turn-on lead, you may connect to the source unit's Power Antenna lead.
7. Connecting signal cables to the amplifier : There are two ways to supply the signal to your MTX amp.
 - To get maximum performance, we suggest connecting a high quality RCA to the corresponding outputs at the source unit and inputs of the amplifier.
 - If a source unit is being used without RCA outputs connect using the included high-level speaker terminals and the proper gauge speaker wire.
8. Connect your speakers to your MTX amplifier's speaker terminals using the right gauge speaker wire. Your MTX amp can drive a 1 ohm minimum load for max power.
9. Double check all previous installation steps, in particular, wiring and component connections. Once verified, reconnect the vehicle's negative battery cable, turn the circuit breaker on or place the fuse in the fuse holder.

Note : Gain Levels on the amplifier should be turned all the way down (counter clockwise) before proceeding with adjustments.



Troubleshooting

Problem	Cause	Solution
No LED indication	No +12V at remote connection No +12V at Power connection Insufficient ground connection Blown power fuse	Supply +12V to terminal Supply +12V to terminal Verify ground connection Replace fuse
Power LED on, no output	Volume on source unit off Speaker connections not made Gain control on amplifier off Signal processing units off All speakers blown	Increase volume on source unit Make speaker connections Turn up gain Apply power to signal processor Replace speakers
Output distorted	Head unit volume set too high Amplifier gain set too high	Lower head unit volume Lower amplifier gain
Balance reversed	Speakers wired L + R reversed RCA inputs reversed	Wire speakers with correct orientation Reverse RCA input
Bass is weak	Speakers wired out of phase Not using MTX woofers	Wire speakers with correct phase Buy MTX woofers
Blowing fuses	Excessive output levels Amplifier defective	Lower the volume Return for service

MTX is proud to be an American Audio Company.



**MTX is a proud member of Mitek Corp high
quality consumer audio product lines.**



**DESIGNED AND ENGINEERED
IN PHOENIX, AZ U.S.A.
MADE IN CHINA**

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NDM644

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Mitek Mobile Limited Warranty

Our Guarantee

Mitek Mobile products (including MTX, Streetwires, Coustic and Magnum) purchased in the USA after 1/1/2013 from an authorized Mitek retailer are guaranteed to be free from material defects in products and workmanship for five (5) years to the original end user purchaser, subject to the terms and conditions below.

Length of Limited Warranty and Remedy

The warranty period begins the day the product is purchased by the end user, and is limited to the original retail purchaser of the product.

Free Replacement Period (2 Years)

Products found to be defective in materials or workmanship during the first 2 years will be, at Mitek's option, repaired or replaced by Mitek at no charge. When a product is replaced during first 2 years, the warranty does not renew, it continues on from the original date of purchase.

Proration Period (Years 3-5)

The prorated purchase price of any product which becomes defective after the first two years and prior to the end of the warranty period may be credited toward the purchase of a new Mitek product. The amount of the proration shall be determined by dividing the purchase price by the number of months of the warranty period (60), and then multiplying the result by the number of months remaining in the warranty period. Any partial months will be rounded to the nearest whole month. For example, a product purchased 37 months ago for \$100 would be calculated by dividing \$100 by 60 months = \$1.66/month, multiplied by 23 (the months remaining in the warranty period) for a prorated warranty amount of \$38.33.

You are responsible for all costs for removal, reinstallation and proper packaging, shipping, insurance or other freight charges incurred in the shipment of the product or part to Mitek. Mitek will ship the repaired or replaced Mitek product or replacement parts to you at no charge. Mitek reserves the right to utilize reconditioned, refurbished, repaired or remanufactured products or parts in the warranty repair or replacement process. Such products and parts will be comparable in function and performance to an original product or part and warranted for the remainder of the original warranty period.

What Is Not Covered

This warranty does not cover the product if it has been subject to neglect, abuse, misuse, incorrect connection, or if it has been subject to unauthorized repair or alterations of any nature, or if the serial number has been altered or removed, and the warranty does not extend to cosmetics or finish. This warranty only applies to products installed and used in the USA.

What You Must Do to Obtain Warranty Service

You must contact Mitek Warranty via our website at MTX.com, or via email at mitekwarrenty@mitekusa.com, or by calling 800-556-2888. If you did not purchase the product directly from Mitek, a proof of purchase must be provided in order to receive warranty consideration. You will be issued a Return Authorization (RA) number which must be written on the outside of the package before returning the product to Mitek.

No Other Warranties

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Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state. This limited warranty supersedes all prior warranties and is not transferable from the original consumer purchaser.

Any assistance Mitek provides to or procures for you outside the terms, limitations or exclusions of this limited warranty will not constitute a waiver of such terms, limitations or exclusions, nor will such assistance extend or revive the warranty. Mitek will not reimburse you for any expenses incurred by you in repairing or replacing any defective product, except for those incurred with Mitek's prior written permission.